

# ***Appendix K***

## ***Environmental Laws, Regulations, Standards, and Orders***

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**Table K-1**  
**U.S. Department of Energy Radiation Protection Standards**  
**and Derived Concentration Guides<sup>1</sup>**

*Effective Dose Equivalent Radiation Standard for Protection of the Public*

*Continuous exposure of any member of the public from routine activities:  
All exposure pathways = 100 mrem/year (1 mSv/yr) effective dose equivalent*

**U.S. Department of Energy Derived Concentration Guides (DCGs)**  
**for Inhaled Air or Ingested Water (μCi/mL)**

<i>Radionuclide</i>	<i>Half-life<sup>2, 3</sup> (years)</i>	<i>In Air</i>	<i>In Water</i>	<i>Radionuclide</i>	<i>Half-life<sup>2, 3</sup> (years)</i>	<i>In Air</i>	<i>In Water</i>
<b>H-3*</b>	1.23E+01	1E-07	2E-03	<b>Eu-152</b>	1.36E+01	5E-11	2E-05
<b>C-14*</b>	5.73E+03	6E-09	7E-05	<b>Eu-154*</b>	8.80E+00	5E-11	2E-05
<b>K-40</b>	1.28E+09	9E-10	7E-06	<b>Eu-155</b>	4.96E+00	3E-10	1E-04
<b>Fe-55</b>	2.70E+00	5E-09	2E-04	<b>Th-232</b>	1.40E+10	7E-15	5E-08
<b>Co-60*</b>	5.27E+00	8E-11	5E-06	<b>U-232*</b>	7.20E+01	2E-14	1E-07
<b>Ni-59</b>	7.50E+04	4E-09	7E-04	<b>U-233*</b>	1.59E+05	9E-14	5E-07
<b>Ni-63</b>	1.00E+02	2E-09	3E-04	<b>U-234*</b>	2.44E+05	9E-14	5E-07
<b>Sr-90*</b>	2.86E+01	9E-12	1E-06	<b>U-235*</b>	7.04E+08	1E-13	6E-07
<b>Y-90</b>	7.31E-03	1E-09	1E-05	<b>U-236*</b>	2.34E+07	1E-13	5E-07
<b>Zr-93</b>	1.53E+06	4E-11	9E-05	<b>U-238*</b>	4.47E+09	1E-13	6E-07
<b>Nb-93m</b>	1.46E+01	4E-10	3E-04	<b>Np-239</b>	6.45E-03	5E-09	5E-05
<b>Tc-99*</b>	2.13E+05	2E-09	1E-04	<b>Pu-238*</b>	8.78E+01	3E-14	4E-08
<b>Ru-106</b>	1.01E+00	3E-11	6E-06	<b>Pu-239*</b>	2.41E+04	2E-14	3E-08
<b>Cd-113m</b>	1.37E+01	8E-12	9E-07	<b>Pu-240*</b>	6.57E+03	2E-14	3E-08
<b>Sn-126</b>	1.00E+05	1E-10	8E-06	<b>Pu-241</b>	1.44E+01	1E-12	2E-06
<b>Sb-125</b>	2.77E+00	1E-09	5E-05	<b>Am-241*</b>	4.32E+02	2E-14	3E-08
<b>Te-125m</b>	1.59E-01	2E-09	4E-05	<b>Am-242m</b>	1.52E+02	2E-14	3E-08
<b>I-129*</b>	1.57E+07	7E-11	5E-07	<b>Am-243</b>	7.38E+03	2E-14	3E-08
<b>Cs-134</b>	2.06E+00	2E-10	2E-06	<b>Cm-243</b>	2.85E+01	3E-14	5E-08
<b>Cs-135</b>	2.30E+06	3E-09	2E-05	<b>Cm-244</b>	1.81E+01	4E-14	6E-08
<b>Cs-137*</b>	3.02E+01	4E-10	3E-06	<b>Gross Alpha</b>	NA	2E-14	3E-08
<b>Pm-147</b>	2.62E+00	3E-10	1E-04	<b>(as Am-241)</b>			
<b>Sm-151</b>	9.00E+01	4E-10	4E-04	<b>Gross Beta</b>	NA	9E-12	1E-06
				<b>(as Sr-90)</b>			

<sup>1</sup> DOE Order 5400.5 (February 8, 1990). Effective May 8, 1990. (See Derived Concentration Guides [p. 1-5] in Chapter 1, Environmental Program Information.)

<sup>2</sup> U.S. Department of Energy. 1981. Radioactive Decay Tables. Washington, D.C.: Technical Information Center, U.S. Department of Energy.

<sup>3</sup> Shleien, et al. 1998. Handbook of Health Physics and Radiological Health Safety. 3rd ed. Baltimore, Maryland: Williams & Wilkins.

\* Radionuclides measured in WVDP effluent.

NA - Not applicable.

**Table K-2**  
***Environmental Laws, Regulations, Standards, and Orders***

*The following environmental standards and laws are applicable, in whole or in part, to the West Valley Demonstration Project. Although the list covers the major activities at the West Valley Demonstration Project, it does not constitute a complete enumeration.*

*Atomic Energy Act of 1954, 42 United States Code (USC) §2011 et seq., as amended, and implementing regulations.*

*Clean Air Act (CAA). Pub. L. No. 84-159. 42 USC §7401 et seq., as amended, and implementing regulations.*

*Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Pub. L. No. 96-510. 42 USC §9601 et seq. (including Superfund Amendments and Reauthorization Act [SARA] of 1986), and implementing regulations.*

DOE Order 231.1. September 30, 1995. *Environment, Safety, and Health Reporting*, including Change 2 (November 7, 1996).

DOE Order 232.1A. August 1, 1997. *Occurrence Reporting and Processing of Operations Information*.

DOE Order 414.1A. September 29, 1999. *Quality Assurance*, including Change 1 (July 12, 2001).

DOE Order 435.1. July 9, 1999. *Radioactive Waste Management*, including Change 1 (August 28, 2001).

DOE Order 440.1A. March 27, 1998. *Worker Protection for DOE Federal and Contractor Employees*.

DOE Order 450.1. January 15, 2003. *Environmental Protection Program*.

DOE Order 451.1B. October 26, 2000. *National Environmental Policy Act Compliance Program*, including Change 1 (September 28, 2001).

DOE Order 5400.1. November 9, 1988. *General Environmental Protection Program*, including Change 1 (June 29, 1990).

DOE Order 5400.5. February 8, 1990. *Radiation Protection of the Public and the Environment*, including Change 2 (January 7, 1993).

DOE Order 5480.4. May 15, 1984. *Environmental Protection, Safety, and Health Protection Standards*, including Change 4 (January 7, 1993).

DOE Regulatory Guide DOE/EH-0173T. January 1991. *Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance*.

***Table K-2 (continued)***  
***Environmental Laws, Regulations, Standards, and Orders***

DOE Standard DOE-STD-1153-2002. July 2002. *A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota.*

*Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986.* Pub. L. No. 99-499. 42 USC §11001 *et seq.*, and implementing regulations.

*Endangered Species Act of 1973.* Pub. L. No. 93-205. 16 USC §1531 *et seq.*, and implementing regulations.

*Environmental Conservation Law of New York State* and implementing regulations (NYCRR).

Executive Order 11988. *Floodplain Management.*

Executive Order 11990. *Protection of Wetlands.*

Executive Order 12856. *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements.*

Executive Order 13101. *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition.*

Executive Order 13148. *Greening the Government Through Leadership in Environmental Management.*

*Federal Water Pollution Control Act (Clean Water Act [CWA]).* Pub. L. No. 95-217. 33 USC §1251 *et seq.*, as amended, and implementing regulations.

*Migratory Bird Treaty Act.* 16 USC §703–712 as amended, and implementing regulations.

*National Environmental Policy Act (NEPA)* of 1969. Pub. L. No. 91-190. 42 USC §4321 *et seq.*, as amended, and implementing regulations.

*National Historic Preservation Act of 1966.* Pub. L. No. 102-575. 16 USC §470 *et seq.*, and implementing regulations.

*Resource Conservation and Recovery Act (RCRA).* Pub. L. No. 94-580. 42 USC §6901 *et seq.*, as amended, and implementing regulations.

*Safe Drinking Water Act (SDWA).* Pub. L. No. 93-523. 42 USC §300f *et seq.*, as amended, and implementing regulations.

***Table K-2 (concluded)***  
***Environmental Laws, Regulations, Standards, and Orders***

*Toxic Substances Control Act (TSCA)*. Pub. L. No. 94-469. 15 USC §2601 *et seq.*, as amended, and implementing regulations.

U.S. Environmental Protection Agency. 1992. *Region II Administrative Order on Consent. Docket No. II RCRA 3008(h)-92-0202. In the Matter of: Western New York Nuclear Service Center.*

Water quality standards contained in the New York State Pollutant Discharge Elimination System (SPDES) permit issued for the facility are listed in Table G-1. Airborne emissions are regulated by the Environmental Protection Agency under the National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR §61 Subpart H (December 15, 1989).